CLAIMS

1. A heat exchanger comprising a plurality of fins (57) and an adsorbent capable of adsorbing moisture from the air and desorbing the moisture into the air, wherein

the surfaces of the fins (57) are covered with an adsorbent layer (58) containing the adsorbent and a binder for supporting the adsorbent on the surfaces of the fins (57) and

a difference in linear thermal expansion coefficient between the fins (57) and the adsorbent layer (58) is smaller than a difference in linear thermal expansion coefficient between the fins (57) and the adsorbent.

2. The heat exchanger of Claim 1, wherein

the binder has a linear thermal expansion coefficient not lower than the linear thermal expansion coefficient of the fins (57).

3. The heat exchanger of Claim 1, wherein

the binder is an organic water-based emulsion binder.

4. The heat exchanger of Claim 3, wherein

the water-based emulsion binder is a urethane resin, an acrylic resin or an ethylene-vinyl acetate copolymer.

5. A heat exchanger comprising a plurality of fins (57) and an adsorbent capable of adsorbing moisture from the air and desorbing the moisture into the air, wherein

the surfaces of the fins (57) are covered with an adsorbent layer (58) containing the adsorbent and a binder for supporting the adsorbent on the surfaces of the fins (57) and

the adsorbent layer (58) is configured to follow thermal expansion or contraction of the fins (57) caused by temperature change without falling off the fins (57).

6. The heat exchanger of Claim 1, wherein

the adsorbent layer (**58**) satisfies $t/\lambda \leq 10$ wherein t is a thickness (mm) of the adsorbent layer (**58**) and λ is a thermal conductivity (W/mK) of the adsorbent layer (**58**) in the thickness direction.

7. The heat exchanger of Claim 6, wherein

a fin pitch is not less than 1.2 mm and not more than 3.5 mm.

8. The heat exchanger of Claim 6, wherein

air velocity is not less than 0.5 m/s and not more than 1.5 m/s.

9. The heat exchanger of Claim 6, wherein

the thickness t (mm) of the adsorbent layer (**58**) is not less than 0.05 mm and not more than 0.5 mm.

10. The heat exchanger of Claim 6, wherein

the thermal conductivity λ (W/mK) of the adsorbent layer (**58**) is not less than 0.05 W/mK and not more than 1.00 W/mK.

11. The heat exchanger of Claim 6, wherein

the heat exchanger (**47** or **49**) is a fin-and-tube heat exchanger.

12. The heat exchanger of Claim 1, wherein

supposing that an adsorbent content ratio in the adsorbent layer (**58**) is expressed by the mass ratio between the adsorbent and the binder (mass of the adsorbent/mass of the binder), part of the adsorbent layer (**58**) adjacent to the surface of the fin (**57**) has a higher

adsorbent content ratio than an outermost part of the adsorbent layer **(58)** in the thickness direction.

13. The heat exchanger of Claim 12, wherein

the adsorbent layer **(58)** has a multilayered structure in which the adsorbent content ratio varies in the thickness direction.

14. The heat exchanger of Claim 13, wherein

the adsorbent content ratio in the adsorbent layer **(58)** decreases toward the fin **(57)**.

15. The heat exchanger of Claim 12, wherein

the adsorbent **(60)** is zeolite, silica gel or a mixture thereof and

the binder **(62)** is a urethane resin, an acrylic resin or an ethylene-vinyl acetate copolymer.

16. The heat exchanger of Claim 1, wherein

the adsorbent layer **(58)** is a solid layer formed by drying an organic water-based emulsion binder mixed with an adsorbent.

17. The heat exchanger of Claim 16, wherein

the adsorbent is zeolite, silica gel or a mixture thereof,

the water-based emulsion binder is a urethane resin, an acrylic resin or an ethylene-vinyl acetate copolymer and

the mass ratio between a solid portion of the water-based emulsion binder and the adsorbent is not lower than 1:3 and not higher than 1:10.

18. The heat exchanger of Claim 16, wherein

the thickness t (mm) of the adsorbent layer (**58**) is not less than 0.05 mm and not more than 0.5 mm.